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*Hypotheses and theory*



## **The Impacts of Technology Innovation on Customer Satisfaction, Employee and Leadership Commitment in CSR Practice**

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**Abstract:** In today's digital economy, the Airline industries face ever-increasing innovation and social demands. This paper aims to explore the mediating impacts of technology innovation on customer satisfaction, employee commitment, and leadership commitment for the reputations of corporate social responsibility (CSR) practice evidence from Ethiopian Airlines. This study used mixed research design methods through primary data sources using structural equations and path modeling analysis. The results show that technology innovation is the most significant factor that mediates customer satisfaction and employee and leadership commitment with CSR practice. Employee commitment and customer satisfaction have also substantially impacted CSR, followed by technology innovation. Comparatively, leadership commitment is inversely and significantly associated with the mediator technology innovation. Although Ethiopia Airlines is trying to improve its CSR reputation, it must adopt more well-planned CSR, digitalization, and innovation capability. The existing airlines' CSR efforts are reactive in nature, responding to customer, employee, and economic, legal, and philanthropic aspects rather than being proactive in transformative leadership commitment and environmental and ethical concerns. Therefore, the airline should prioritize digital technology innovation, transformative leadership, and moral and ecological CSR concerns. This will boost the airlines to treat CSR and technology innovation as the two sides of one coin.

**Keywords:** CSR, Customer satisfaction, Employee commitment, Leadership commitment, Technology innovation

### **1. Introduction**

For ever-increasing competitive advantages, the aviation sector must focus on critical variables such as customer, employee, leadership, and CSR pressures to survive in a highly competitive digital market economy. Airlines employ a range of key modes of technology acquisition, equipment, and reconfiguration business models to address the anticipated demands. Airlines' competitive advantages may stem from organizational commitment, technological innovation, and difficult-to-replicate CSR initiatives. Due to increased public awareness about the influence of corporate actions on the environment and society, CSR has gained momentum as a critical problem in many firms (Hasan et al., 2017). Hence, CSR can be defined as companies integrating social, economic, and environmental issues into their business operations and interacting with their stakeholders (Mortazavi et al., 2013). CSR is also broadly defined as a strategy to diminish the negative consequences of corporate production and operation and ensure society's welfare and compassionate practices of businesses under pressure by owners and shareholders to improve profitability rather than build or preserve organizations (Crifo and Forget, 2015). In addition, CSR is a model in which firms integrate social and environmental concerns into their business

operations and interact with their voluntary and mandatory activities (Sen, 2017). In other ways, CSR and innovation are the foundation of business competencies (Rexhepi et al., 2013); the improvements in the CSR process can be referred to as 'social innovation.'

In contrast, CSR-driven innovation is about right, while innovation-driven CSR is about right (MacGregor and Fontrodona, 2008). As the above literature shows, CSR has various concepts, contextual definitions, and inferences. Therefore, the CSR knowledge and practical base are limited in terms of understanding; CSR's successful adoption commonly depends upon firms' and countries' technology capabilities. These all confirm that CSR concepts and practices are still debated and have yet to universally decide on meanings other than contextual compromise.

Moreover, the interest in the relationship between innovation and CSR about sustainability has grown in the last few years (Reverte et al., 2016). Besides, a good firm that dynamically practices and advocates for reputations of CSR initiatives, particularly in social and environmentally responsible methods, has a better chance of increasing customer satisfaction, employee and leadership commitment, and developing a positive reputation and attitude toward the company (Han et al., 2019). This is more practical and true in the airline industry. Since the aviation industry has a significant environmental footprint, it is under immense pressure to decrease emissions and adopt socially and environmentally friendly technologies and management practices (Bass et al., 1987; Bocquet et al., 2014). Technology capability is the most effective way for a company's technology to advance and essential resources to accumulate (Jones et al., 2000).

In this regard, leaders and managers must choose and innovate a technology that integrates production factors, such as capital, labor, and other aspects, to minimize production costs and increase revenue while considering technology acquisition (Lambe and Spekman, 1997). Hence, innovation could help to fulfill the demands of diverse stakeholder groups better and go beyond their expectations by becoming more active in more strategic CSR initiatives (Hlioui and Yousf, 2020). As a result, innovation may promote more socially responsible businesses; CSR and innovation are two sides of the same coin. In other words, firms with a low innovation capability cause CSR to reduce consumer satisfaction levels, harming market value because of the lower satisfaction (Luo and Bhattacharya, 2013). However, the relationship between technological innovation and the reputation of CSR practice has been viewed in different settings. The management and practical implications still have knowledge and context gaps that must be resolved (Lambe and Spekman, 1997).

Furthermore, customer loyalty increased when customers believed Airlines were performing desirable CSR but not required CSR (Kim et al., 2020). Customers with higher income or education levels are more loyal to mandatory CSR. In contrast, business moral responsibilities were influenced by perceived CSR, which influenced positive and negative emotions, brand attitude, and the social norm of customer moral obligations (Han et al., 2020). However, various airlines' CSR efforts focused on lowering emissions, enhancing community involvement, and diversifying their workforce (Cowper-Smith and de Grosbois, 2011). In this regard, an airline's performance depends on its ability to attract customers, manage its fleet and staff, and manage its finances (McCabe, 2006).

On the contrary, a higher level of economic responsibility leads to a better customer attitude and satisfaction (Park, 2019). While environmental responsibility has a noticeable impact on customer attitude and satisfaction, customer attitude and fulfillment substantially impact business CSR reputation. As a result, the connections and consequences between customer satisfaction and CSR behavior need to be more questionable.

Employees who work in an environment where CSR fosters goodwill and morale are thus encouraged to contribute to the organization through proactive behavior (Ilkhanizadeh and Karatepe, 2017). To put it another way, CSR is a strategy that involves a significant portion of the workforce to address the problem of poor workplace employee engagement (Glavas, 2016). On the other hand, employee participation in CSR is primarily motivated through love. While bringing about change in the lives of others is a secondary effect of charity, optimism, and inspiration, participants experience progressive transformation inside themselves as they embark on this journey and make a difference in the lives of others (Cook and Geldenhuys, 2018). Employee task performance improves when intrinsic and extrinsic motivations are connected to CSR. As a result, when employees believe their company invests in intrinsic and extrinsic CSR, they are likelier to put extra effort into their work (Story and Neves, 2015).

Furthermore, highly engaged employees show career satisfaction and vocal conduct (Karatepe and Choubtarash, 2014). Even yet, the influence of employees on CSR behavior is important. Mostly, the people are the company, and the future of corporate brands is in employees' commitment (Kowalczyk and Kucharska, 2019). Thus, companies should improve employee commitment to achieve better outcomes in corporate social responsibility practice. However, there needs to be more understanding of why and how CSR affects individuals or employees. So, examining the relationship between trust in employee engagement and CSR contributes to the gap.

From the company's leadership perspective, the airline's communication and performance-building initiatives result in a harmonious enterprise culture, leading to increased productivity and improved product creation and management (Alshubaily, 2017). The organization's outcome depends on a highly skilled employee and excellent leadership. Moreover, CSR practices assist enterprises in retaining their best-talented personnel, allowing them to maintain leadership positions (González-Ramos et al., 2018). CSR is becoming increasingly significant to technological leaders to obtain valuable knowledge that enables exploring new prospects through technological innovation. In contrast, profitability and size have a positive and significant relationship with CSR disclosure. In contrast, the leadership aspects of corporate governance have no impact on CSR disclosure, and board independence has a negative influence (Issa, 2017).

On the other hand, the primary drivers of CSR reporting and motivations are reputation and brand value, employee CSR awareness, communication with stakeholders, management systems, leadership mindset, market share, and transparency in government (Kuo et al., 2016). As a result, some studies looked into the impact of leadership on CSR practice in the context of other constraints. However, technology innovation's role as a mediator in determining the relationship between leadership roles and CSR or leadership and CSR perception is limited.

Ethiopian Airlines has been extensively improving its attractiveness, boosting financing, adopting safety aviation technology, raising regulations, and increasing public demand for customers, employees, and leadership. However, few studies have attempted to assess the aspects influencing organizational work conditions on employee job satisfaction (Wodajo, 2019), a case study on measuring economic sustainability performance (Alemayehu and Vom Brocke, 2011), and examined firm-level technological learning and catch-up in Africa using Ethiopian Airlines (Oqubay and Tesfachew, 2019). There still needs to be more deep-rooted study experience in this field, primarily focused on the impact of customer satisfaction and employee and leadership commitment on CSR practice via technology innovation as a mediator. This study has been done to identify the influence of technology innovation in mediating between customer satisfaction, employee engagement, and leadership commitment on CSR practice, as evidenced by Ethiopian Airlines, which has great relevance to the airline sector's success. The study mainly proposed a conceptual model supported by a structural equation model and path modeling analysis. Therefore, this study addressed the following fundamental research questions. (1) *What factors matter to the reputation of CSR practice in Ethiopian airline enterprises?* (2) *How do those dynamics affect the reputation of CSR endeavors?* (3) *What is the relationship between customer, employee, and leadership commitment for effective CSR practice?*

## **2. Literature Review**

### **2.1. Dynamic Capability and CSR**

Dynamic capabilities are the firm's ability to integrate, build, and reconfigure internal and external competencies to handle quickly changing environments (Teece et al., 1997). However, the speed of change in the environment may be less relevant than the degree of uncertainty. This means that dynamic capability enables businesses to be adaptable, absorbent, and innovative capability. In other words, a firm's dynamic capability is its ability to integrate, build, and reconfigure internal and external competencies in response to environmental changes (Li et al., 2021a). As a result, strategic CSR implementation will contribute to the long-term business.

Moreover, firms engage in CSR initiatives for various reasons: offering a positive image, attracting more investment, and maintaining stable stakeholder relationships (Anderson et al., 2004). In this case, companies

must address CSR concerns and incorporate significant risks and practices into their operating plans when trying to do business. Although the concepts of capability and CSR combined, an in-depth investigation of the connections between dynamic capability and sustainable CSR needed to be more detailed. Therefore, dynamic capability is still required to impact CSR adoption and business performance significantly.

On the other hand, (Teece and Pisano, 1994) stated that an organization's ability to face new problems requires three dynamic capabilities, mainly: employees' ability to swiftly learn, produce new strategic assets, and integrate these new strategic assets. Here, capability, technology, and consumer input into firm operations affect firms' capability and social change. In contrast, while dynamic capability is an important part of CSR adoption, it has a negative impact on long-term performance. A high dynamic capability level is negatively associated with long-term CSR adoption and implementation (Moon and Shen, 2010). In other words, companies with a high dynamic capability were less likely to embrace sustainable CSR practices, and their adoption rates needed to be higher. This observation supports the hypothesis that people make decisions based on risk aversion and declining sensibility.

The dynamic capabilities framework enables leaders and managers to organize and prioritize the never-ending flow of competing and contradictory information that bombards them as they attempt to acquire a competitive advantage from a managerial point of view (Teece et al., 1997). In this case, dynamic capabilities go a step further by recognizing that organizations do not just adapt to their surroundings; they also want to shape things. Whereas systems theory emphasizes internal stability over time and homogeneity among similar systems, dynamic capabilities include an explicit role for management/leadership, allowing systemic change to begin from the inside (Teece, 2017), which is the source of business heterogeneity. In comparison, firms with dynamic capabilities that are more excellent or lower than the average industrial level were less likely to implement CSR practices that ensured poor sustainable CSR performance (Li et al., 2021).

Moreover, dynamic capabilities are a system component that contains resources and strategy. As a result, they work together to evaluate how much of a competitive advantage a company can achieve over its competitors. In this context, dynamic solid capabilities are required to create the organizational agility necessary to deal with deep uncertainty generated by innovation and the resulting dynamic competition (Peteraf and Maritan, 2016). Besides, the only way for businesses to stay competitive in the marketplace is to build new capabilities of change continuously to match changing needs with processes, skills, and routines that are unique and difficult to back up by competitors, which can accomplished using the concept of dynamic capability (Zaidi and Othman, 2014).

However, different works interpret the connections between dynamic capability, CSR, technology, and social change differently. When businesses become more innovative, they become more active in CSR activities. Various types of dynamic capacities resulted in inconclusive or sometimes contradictory results. For instance, (Marcus and Anderson, 2006) discovered a positive association between dynamic capabilities and business competencies, whereas (Arend, 2014) found a positive relationship between dynamic capabilities and green activities. Similarly, (Dangelico et al., 2017) looked at the impact of dynamic capacities on several sustainability concepts, including green innovation, without looking at the impact on sustainability performance. As stated in the previous debate, the existing literature needs more clarity. Some studies looked at the relationship between dynamic capabilities and CSR. In contrast, others focused on innovation and CSR, yet only a few looked at the relationship between CSR leadership, reputations, and business sustainability performance.

Furthermore, it is still being determined whether dynamic capabilities help align economic, environmental, and social performance, as well as ethical, legal, and philanthropic concerns. Researchers have primarily focused on large corporations and enterprises' dynamic capabilities in response to technology and social change that considered implementing CSR practices. As a result, this study used the role of technological innovation to evaluate the impact of customers, employees, and leadership on CSR practice in the airline industry. Besides, the study attempted to build understanding and knowledge of CSR practice using dynamic capability concepts.

## **2.2. The Effects of CSR**

CSR is defined as a company's commitment to managing its operations' environmental, economic, and social impacts in a responsible and public-spirited manner. CSR positively affects reputation, dynamic capabilities affect competitive advantage (Sarjana et al., 2017), whereas reputation affects competitive advantage. In addition,

CSR is also considered an effective business strategy that includes economic, legal, ethical, and philanthropic responsibilities as well as their impact on corporate reputation, employee engagement, and organizational commitment (Soriano and Castaño, 2020). As a result, airline companies may continually enhance and examine their CSR strategy and operations through technological innovation. In this regard, airlines can constantly use technological innovation to improve and review their CSR strategy and procedures.

In addition, CSR positively affects companies Gatsby and retains higher equal higher-quality (Turban and Greening, 1997). Through leadership and stakeholder collaborations, an organization's CSR initiatives can be linked to attempts to improve its competitiveness (Amos, 2017). The CSR efforts appear and are influenced by the leadership of firms and individual employees' innovative behavior, which may contribute to defining the organization's competitiveness. Similarly, CSR is considered a company's social responsibility, which demands meeting society's economic, legal, ethical, and discretionary expectations at any time. When CSR's positive effects on financial and non-financial performance are better, leadership styles and organizational tactics also improve (Saeidi et al., 2021). In contrast, CSR activities favor intrinsic motivation while having no effect on extrinsic motivation at the company or supra-organizational level (Kunz, 2020). As a result, CSR neither encourages nor discourages extrinsic motivation.

Furthermore, a shift in CSR strategy that considers many stakeholders will almost certainly minimize conflict in the business and lead to more balanced economic, legal, ethical, and philanthropic performance (Carroll, 1991). Besides that, it is essential to consider the three CSR triple bottom-line approaches (financial, social, and environmental) (Lez-Rodríguez et al., 2015). This implies that human values influence human perceptions of CSR, consumer perceptions of CSR initiate the relationship between human values and entrepreneur perceptions of CSR, and there are significant differences in consumer and entrepreneur perceptions of CSR concerning the cultural environment. Firms with better CSR performance are more likely to adopt integrated risk management practices. CSR activities targeting primary and secondary stakeholders are equally important in facilitating risk management practices (Lu et al., 2020).

### **2.3. Impacts of Customer, Employee, and Leadership on CSR Practice**

#### **2.3.1. Customer Satisfaction**

However, consumer satisfaction has been described as an evaluation of a consumer's whole purchase and consumption experience of goods or services over time (Li et al., 2021; Johnson et al., 2022; Looor-Zambrano et al., 2022; Loureiro et al., 2012). According to studies, CSR positively impacts the company since it is assumed to maintain or improve customer and society well-being (Carroll, 1991; Lu et al., 2020; Luo and Bhattacharya, 2013). In this regard, a good CSR record of accomplishment can develop a positive image in customers' minds, influencing their preferences and views toward the firm (Phillips et al., 2019). This research suggests that developing and promoting CSR culture and leadership positively impacts CSR performance, which improves firm performance, specifically customer satisfaction and financial performance.

Though Customer trust plays a role in mediating the influence of brand image and brand awareness on purchase intention (Pramudya et al., 2018), corporate image affects customer trust, while brand awareness affects both customer trust and purchase intention. Customer trust has an impact on the possibility of making a purchase. Moreover, CSR actions may indirectly impact customer satisfaction, and CSR dimensions positively impact customer satisfaction, with brand image acting as a mediating factor (Mohammed and Rashid, 2018). In addition, consumers continue to be a particularly influential segment among all stakeholders for firms to undertake CSR efforts. Furthermore, (Mishra and Suar, 2010) suggests that customers are more likely to make favorable judgments about a product if they know a socially responsible company manufactures it. Such assumptions, which turn customers into the company's brand ambassadors and champions who engage in advocacy behavior, induce customer trust. In other words, the impact of transformational leadership and employee performance on organizational commitment has a positive and significant influence on organizational commitment and vice versa (Alshehhi et al., 2019). It implies that transformational leadership and employee commitment affect organizational commitment and CSR practice credibility. As a result, to test the derived hypothetical conceptual research model, this study formulated the following hypothesis.

Hypothesis 1 (H<sub>1</sub>): Customer satisfaction positively and significantly affects the reputation of CSR Practice.

### **2.3.2. Employee Commitment**

Employee commitment is a critical force for the mutual benefit of businesses. Besides, employee commitment is influenced by organizational justice, and employees who believe their companies are pretty run will be more dedicated and motivated to accomplish more for their employers (Đorđević et al., 2019). In addition, employee outcomes on identification, engagement, organizational attractiveness, turnover, commitment, job satisfaction attitudes, and CSR initiatives used to have a stronger association than behavioral results (Paruzel et al., 2021). In other words, CSR can assist businesses in attracting, motivating, and retaining employees. Furthermore, various findings show that employees value a company's social responsibility efforts, which has a favorable impact on employee commitment (Marić et al., 2021; McCabe, 2006; Meyer and Maltin, 2010).

Employees committed to an organization are less likely to leave and are more likely to attend regularly, perform effectively, and be good organizational citizens, which benefits organizations. Consequently, the most consistent findings concern the positive associations between affective commitment and employee well-being (Meyer and Maltin, 2010). In contrast, the associations between continuance commitment and employee commitment well-being are significant and negative. In comparison, leadership and communities favorably influence employee satisfaction, which impacts team performance and brand loyalty (Sung and Hu, 2021). Employee job satisfaction also mediates the links between transformational leadership, brand philosophy, internal brand communities, and work outcomes. Likewise, CSR participation affects frontline employees' perceived well-being (Hu et al., 2019). Hence, the following hypothesis has been tested and supports the proposed conceptual research model's aims.

Hypothesis 2 (H<sub>2</sub>): Employee commitment positively and significantly influences CSR Practice.

### **2.3.3. Leadership Commitment**

From CSR leadership, transformational leader commitments are significantly related to employee performance, commitment, satisfaction, individual and group performance, organizational effectiveness, and employee-customer orientation. Accordingly, (Bass et al., 1987) define transformational leaders by using one or more of the "Four I's": individualized consideration, intellectual stimulation, inspirational motivation, and charisma or idealized influence are all features of transformational leadership. Having this, transformational leadership enables enterprises to adopt common motivational ideas, empowers managers, and gets followers to support their attempts to create a stable organizational culture and performance (Panganibanl and Madrigal, 2020). Furthermore, CSR and organizational innovation have been investigated as potential mediators of relationships between transformational leadership's basic dimensions and organizational performance (Khan et al., 2018). The findings revealed that when transformative leadership and CSR are combined, excellent performance can be achieved, and high performance is intimately linked to high innovation. In other words, transformational and transactional leadership approaches positively improved CSR's environmental and ethical components (Changar and Atan, 2021).

Based on morality and ethical values, leadership style promotes employee engagement in CSR practices (Czerniachowicz et al., 2017). Thus, the connections between CSR outcomes and leadership styles favor human resource management practices and the company's overall culture. The findings have a constraint regarding which form of leadership is more likely beneficial and meaningful for CSR practice. Compared to a survey of managers conducted by (Du. et al., 2013), firms with more transformational leadership are more likely to engage in institutional CSR practices. In contrast, firms with transactional leadership are not associated with such training. On the other hand, firms with more ethical leadership are more likely to engage in institutional CSR activities with non-governmental organizations. In contrast, transformational leadership is related to institutional CSR practices to a lesser extent (Budur and Demir, 2019). On the other hand, firms with more ethical leadership are more likely to engage in institutional CSR practices with non-governmental organizations. In contrast, transformational leadership is connected with less training in CSR (Demir and Budur, 2019). These findings show that there is still a disagreement over the effects and types of leadership styles on a company's CSR implementation.

The relationships between CSR, transactional leadership, transformational leadership, and long-term success are positively mediated by organizational commitment (Dai et al., 2021). Besides, the value of organizational performance and employee engagement levels appear to be influenced by an increasing behavior of leaders who

commit to staying with their company, working toward organizational target success, focusing on achieving goals, and working toward organizational change success (Nasomboon, 2014). Therefore, transformational leadership indirectly has a significant effect on the competitive advantage of enterprises through organizational learning capabilities and innovation (Sugiyanto et al., 2017). Besides that, a firm's ability, publicity, and social responsibility performance should be jointly considered to strengthen recruitment campaigns (Tsai et al., 2015). On the other hand, the dynamics between employee dedication and leadership style limit the effect of CSR. This study examined how technology innovation influences customer satisfaction, employee and leadership commitment, and CSR reputation adoption. The study tested and estimated the fit indices of a hypothetical conceptual model using the following hypotheses.

Hypothesis 3 (H<sub>3</sub>): Transformational leadership commitment significantly influences sustainable CSR practices.

#### **2.4. The Mediation Role of Technology Innovation**

Responsible innovation, a new management paradigm that balances the need for profit growth with the appeal of social value, is critical in evaluating a company's economic, social, and environmental performance (Tian and Tian, 2021). In this regard, it offers innovative thinking for helping businesses become more technologically and socially adaptable, risk-resistant, and long-term viable during times of hardship. Moreover, (Bocquet et al., 2014) simultaneously considered the impact of technological innovations (product and process) and CSR on business growth. As a result, the findings show that companies with strategic CSR accomplish development through both product and process technological innovation. However, when there is public pressure, CSR improves. In a poor atmospheric environment, government environmental regulations increase enterprise-running expenses and decrease the intensity of technological innovation investment (Zhou et al., 2019). Thus, the relationship between CSR and technological innovation needs to be stronger. In other ways, CSR requires numerous changes for companies, and creation can, therefore, constitute a tool supporting the implementation of CSR (Ferauge, 2013). Likewise, Khan et al. (2018) suggest CSR and organizational innovation as potential mediators of transformative leadership and organizational performance linkages.

More innovative firms engage more in CSR activities, which is more vital for firms of higher risk and operating in a less munificent environment (Shen et al., 2018). Moreover, firms with higher innovation reap more excellent financial benefits from their CSR activities. Furthermore, the influence of transformational leadership and organizational learning capacities on large and medium-sized enterprises' competitive advantage is mediated by innovation (Sugiyanto et al., 2017). Thus, organizational learning capacity, innovation, and transformational leadership indirectly impact competitive advantage. Furthermore, Zhu et al. (2018) found that technological innovation can increase environmental performance when combined with employee efforts, social image, ecological practices, and community involvement.

In comparison, companies develop two perceptions about the relationship between technological innovation and CSR, which helps them gain a competitive advantage (Preacher and Hayes, 2008; Reverte et al., 2016). This is the case for firms that are more innovative in doing things differently and better serving their customers. Other businesses consider CSR a social strategic engagement that can help with learning and adaptation, emphasizing social competency that can improve with process and product innovations (Bocquet et al., 2014). However, the nature of most creations is incremental; the effect is limited. Here, the findings reveal a clear link between technology innovation and CSR with different degrees. In other words, large companies are just some who can add value through innovation-driven strategic and formal CSR. Still, small businesses can introduce radical innovation because of their CSR activity. The above two scenarios imply a disagreement over how and why considerable synergy of technology innovation and CSR domains occurs, which requires further study. Correspondingly, regarding CSR activities and employee affective commitment, the 'environment' and 'people' aspects impact the five CSR dimensions (Kucukusta et al., 2016). Because of these results and debates, the airline industry should emphasize consumers and people more by giving equal opportunities; technology and digital innovation are significant parts of CSR performance. In other words, employees generate more robust levels of organizational trust and pride when organizations engage in CSR initiatives, strengthened by empathic leadership and employee CSR participation (Athanasiadou and Theriou, 2021). Due to these feelings, employees are more engaged and have fewer feelings of job insecurity. On the contrary, the relationship between CSR and corporate performance is only mediated by reputation and competitive advantage (Saeidi et al., 2014).

Therefore, there needs to be more clarity regarding assessing technology innovation and leadership commitment as mediators or direct influences on CSR practices.

As previously discussed, there are some questionable findings and conclusions regarding the association between customer satisfaction, employee commitment, leadership commitment, and the mediation role of technology innovation in CSR practice. The debating gaps still require further analysis. This research examined how technology innovation mediates customer satisfaction impacts among employees and how transformational leadership commitment influences corporate social responsibility. This implies additional evidence and analysis are still needed to fill the debate gaps. Hence, this study examined how technological innovation influences customer satisfaction, employee commitment, and transformational leadership commitment to corporate social responsibility. Therefore, this study stated the following hypothesis supported by previous research.

Hypothesis 4 (H4): Technology innovation significantly mediates customer satisfaction, employee and transformational leadership commitment, and CSR Practice.

### 2.5. Conceptual Research Model

This study proposed a conceptual research model to explore the impacts of customer satisfaction, employee commitment, and leadership commitment on the adoption of CSR practice using the mediation role of technology innovation. Ethiopian Airlines has established itself as a competitive, well-respected, and socially responsible airline in home and international markets. Moreover, it is now the first African top ten-awarded Airline in terms of competitiveness, profitability, and social responsibility aviation platform. This research examined how Ethiopian Airlines' customer satisfaction, employee commitment, and leadership affect CSR reputation using the mediation role of technology innovation. Hence, customer, employee, and leadership are independent variables, whereas CSR practice reputation is the outcome variable, as shown in Figure.1.

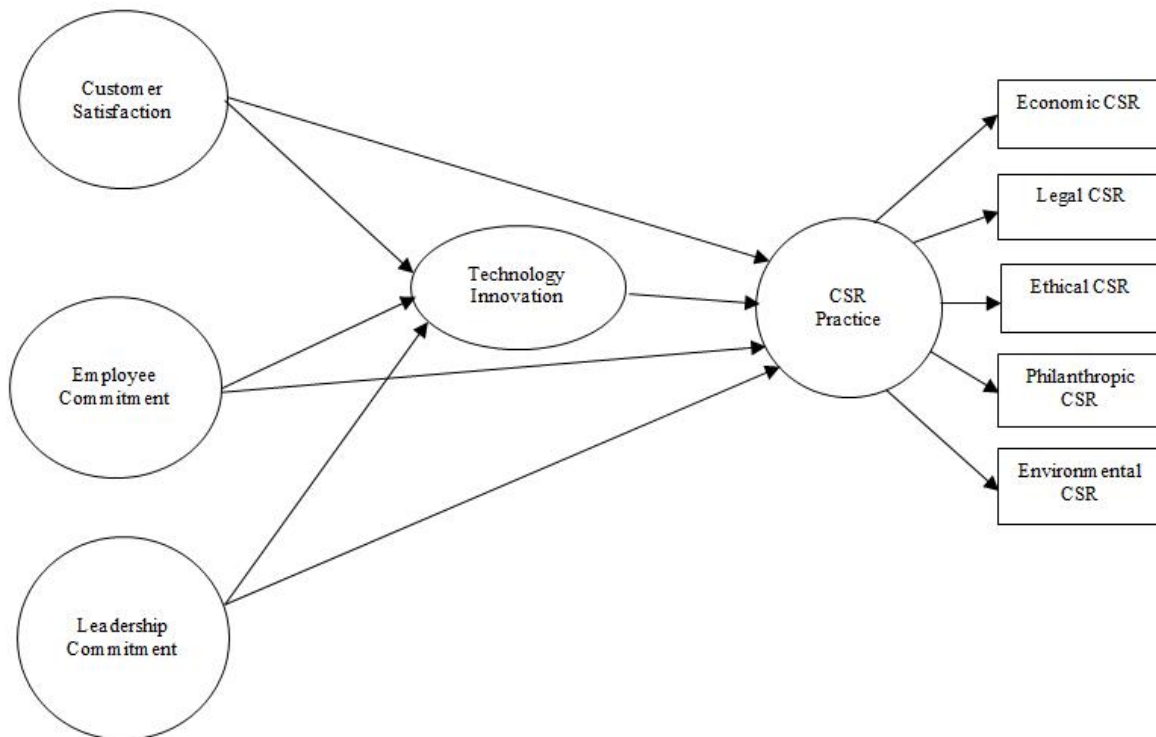


Figure 1: Authors' Conceptual Research Model.



### **3. Materials and Methods**

#### **3.1. Study Design**

This research focused on Ethiopian Airlines, which operates in the new spirit of the African aviation industry. The paper applied a combination of mixed-methods research designs to collect, evaluate, verify, analyze, and integrate quantitative and qualitative survey data in this study (Du et al., 2017), which used a quantitative and qualitative research design. The response variables in this study were customer satisfaction, employee commitment, and leadership commitment. It also considered the reputation of CSR practices as an outcome variable and the role of technology innovation as a mediator. Hence, primary and secondary data sources have been employed for this investigation. The individual respondents, especially airline personnel and management of leadership components, were the critical survey data sources. As a result, all study variables were gathered based on previously validated findings and quantified tools of standardized, self-administered questionnaires with five-point Likert scale items.

#### **3.2. Sample and Data Collection**

This study's sample size is determined using a population of 13,942 employees. Purposive sampling techniques were used to estimate the sample size, resulting in 371 samples (Taherdoost, 2016). Moreover, the study employed all the nine international airports of Ethiopian Airlines, using purposive sampling. Participants and functions were included in the sample to use better quantitative research methods, which are more likely different from others. Simple random sampling strategies were used to choose the respondents who filled out the questionnaire (Rexhepi et al., 2013; Saeidi et al., 2021). The specified sample of 371 has been determined and supported using the Morgan sample determination table (Januszyk et al., 2011).

The primary data collection tools were questionnaires. The researchers also conducted online interviews with 12 key informants to acquire extra relevant information. The purpose of this online interview was to support the qualitative aspects of the study's research approach. Consequently, in a low-income agricultural economy with limited skills, few technological capabilities, and a low knowledge base, this study chose the Ethiopian Airlines enterprise to examine how customer satisfaction, employee, and leadership commitment affect CSR practice supported by technological innovation and organizational capabilities.

#### **3.3. Methods of Data Analysis**

After satisfying the required assumptions test, this research evaluated all the obtained data. As a result, the gathered and validated data were inserted, coded, processed, and analyzed using the AMOS 21 statistical software version. The stated hypothesis was also tested and confirmed to be acceptable. This study used structural equation modeling, path diagram modeling, and a product distribution method. Furthermore, based on the proposed conceptual research model and derived hypothesis, the estimated findings were more likely to be supported.

#### **3.4. Measurements of Constructs**

##### **3.4.1. CSR Practice**

Ethiopian Airlines is Africa's largest airline by passenger volume, locations served, fleet size, and revenue. Ethiopian Airlines is the world's fourth-largest airline through the number of destinations served. The government's intense dedication and assistance make Ethiopia's aviation industry possible. Even while Airlines strive to be the best, it would be preferable if CSR practices provide the national technology innovation systems rather than simply imitating other developed countries' innovation results. Hence, Ethiopian Airlines has chosen as a study area to investigate how technology innovation influences CSR practice.

Therefore, the outcome variable CSR practices were measured using previously validated findings (Sarjana et al., 2017; Czerniachowicz et al., 2017; Sen, 2017). In this regard, the study evaluated CSR practices in terms of economic, legal, ethical, philanthropic, and environmental aspects. The reputation of CSR practices in Ethiopian Airlines has been measured using five indicators using the prepared five-point Likert-scale questions. As a result,

the response options varied from 1 = "strongly disagree" and 5 = "strongly agree." The contextualized questionnaire is attached in the Appendix.

### **3.4.2. Independent Variables**

Customer satisfaction can be achieved via a customer's interaction with a company (Terpstra and Verbeeten, 2014). Hence, it is vital first to satisfy and keep customers for various reasons, including cost efficiency. This study used and contextualized previously validated measurement items (Sobe, 1982; Soriano and Castaño, 2020; Story and Neves, 2015). The contextualized articles focused on our company providing excellent services or products; my choice to contact the company was wise. I trust the company to be sincere in dealing with consumers; it is very responsive and provides reliable information to its consumers.

Employee commitment is an effective response to the entire organization and the degree of attachment or loyalty that employees feel and are devoted to their firms. This study adopted the previously validated research findings (Sugiyanto et al., 2017; Taherdoost, 2016). The contextualized items focused on: (1) I am thrilled to have chosen this organization to work in, not another. (2) This is the best possible organization to work. (3) Our employees are very committed to our organizations. (4) Our employees often go beyond their responsibilities to secure the benefit and well-being of the organization. (5) Our organization and employees' bonds are powerful.

The position of responsible CSR leadership is an emerging paradigm based on new business practices that could help alleviate managerial mistrust. Conversely, depending on how it is done, it can either promote or hinder the implementation of CSR (Christensen et al., 2014). The impacts of transformational leadership commitment on CSR practice are examined in this study by using previously validated findings (Phillips et al., 2019). When evaluating CSR leadership commitment, inspirational/motivational, intellectual stimulation, idealized influence, and individualized consideration are considered.

### **3.4.1. Mediating Variable**

In this study, technology innovation strategy has been defined as a position of technological capacity, technological leadership, or technology pioneers in terms of adopting, consuming, and providing new products or services to the market (Teece and Pisano, 1994; Terpstra and Verbeeten, 2014). As a result, taking a proactive strategy will give the firm a competitive edge, not only in terms of being the first to market but also in terms of enhanced commitment to investing airline resources in CSR-based technology innovation development. This study adopted measurement items to evaluate the effect of technology innovation as a mediator based on previously validated and explored findings (Zahra and Covin, 1993). They also adopted to measure the impact of technology on the adoption of CSR from the previous validated results (Malaquias et al., 2016). The contextualized items rely on management technology to interact with customers and suppliers.

## **4. Results**

### **4.1 Analysis of Demographic Data**

In this study, from the survey results of a 371 sample of demographic data, 56.3% (209) and 43.7% (162) of respondents were male and female, respectively. However, males have a slightly more excellent average ratio than females. The Ethiopian Airlines is paying more attention to achieving gender parity among its employees. According to the age of respondents analysis, 35.8% of respondents were 31–35 years old, 28.5% were 26–30 years old, 16.6% were 18–25 years old, 13.9% were 36–40 years old, and 5.2% were more than 40 years old. As a result, most respondents were mature and productive in the airlines. Regarding educational background, 49.3% of respondents were undergraduates (bachelor's degree), 31.3% were postgraduates, 8.6% had diploma status, 7.9% had a PhD, and the remaining 3.3% possessed other educational levels. In this sense, the majority of the respondents were able to provide helpful information on the study. The responders were capable of understanding and reacting to questions reasonably.

### 4.2 Constructs Validity and Reliability

In this study, the convergent validity instruments were estimated using factor loadings (>0.50), reliability (Cronbach's>0.70), composite reliability (>0.70), and average variance extracted (>0.50), which enables the evaluation of structural equation models with unobservable variables and measurement error (Claes Fornel and Larcker, 1981). With this regard, all the assessed factor loading values in the confirmatory factor analysis of the measurement model were more remarkable than 0.726, as shown in Table 1. The Cronbach has selected above 0.70 threshold values. The alpha values indicate that the measurement models of constructs are internally consistent. Besides that, all five constructs demonstrated high reliability in predicting the research model. Furthermore, the square root of AVE is more significant than the correlations across constructs for each of the variables, and the loadings of the constructs are higher in their respective constructs than in the rest (cross-loadings), showing discriminant validity of the measures used. As revealed in Table 1, it is a practical measuring model (outer model).

**Table 1:** Test Results for Constructs Validity and Reliability

Construct	Measuring Items	Factor Loadings	Cronbach's Alpha	C.R	AVE
CS	CS1	.899	.955	.894	.835
	CS2	.886			
	CS3	.963			
	CS4	.940			
	CS5	.879			
ECM	EC1	.907	.936	.835	.789
	EC2	.891			
	EC3	.856			
	EC4	.903			
	EC5	.883			
LCM	IMLC1	.726	.812	.713	.631
	ISCC2	.840			
	IILC3	.801			
	ICLC4	.806			
TI	TI1	.902	.938	.820	.791
	TI2	.918			
	TI3	.879			
	TI4	.867			
	TI5	.881			
CSR	ECCSRP1	.939	.939	.860	.795
	LECSR	.920			
	ETCSR	.882			
	PHCSR	.914			
	ENCSR	.796			

Note: CS = Customer Satisfaction, ECM = Employee Commitment, LCM = Leadership Commitment, TI = Technology Innovation, and CSR= Corporate Social Responsibility Practice

In this regard, all the assessed factor loading values in the measurement model's confirmatory factor analysis were more than 0.726, as indicated in Table 1. To analyze the survey data's internal consistency, Cronbach's alpha coefficient, greater than the threshold value of 0.70, has been chosen. The alpha values show that the construct measurement model is internally consistent. Besides that, the entire set of five constructs accurately predicted the proposed models. The Cronbach's coefficients revealed that each construct had a high level of internal consistency. Similarly, all the weighed factor loading values of constructs assumed in confirmatory factor analysis towards the measurement model were more significant than 0.50. In addition, the composite reliabilities (C.R) of constructs ranged from 0.812 to 0.955, as shown in Table 1.

Finally, the extracted average variances (AVE) ranged from 0.631 to 0.835, with all constructs and measuring items exceeding the recommended 0.50 (Anderson and Gerbing, 1992). In other words, the hypothesized factors account for a more significant proportion of the total variance of the observed items. In this research, the need for discriminant validity determines whether the constructs in the proposed conceptual study model are highly connected. It compares a concept's Square Root of AVE with the correlation between that construct and other constructs (Bagozzi et al., 2013).

On the other hand, inter-construct correlations should be less than the square root of the average variance extracted for each construct (Peng and Lai, 2012; Malhotra and Grover, 1998). Hence, the inter-construct correlations are significantly lower than the square root of the average variance derived from the individual factors, confirming discriminant validity as shown in Table 2.

**Table 2:** Correlation Matrix and Discriminant Validity

Constructs	M	SD	1	2	3	4	5
1 CS	4.57	0.951	<b>0.901</b>				
2 EC	4.54	0.943	0.493	<b>0.888</b>			
3 LC	3.17	0.736	0.303	0.367	<b>0.794</b>		
4 TI	4.44	0.892	0.360	0.160	0.382	<b>0.889</b>	
5 CSRP	4.45	0.915	0.259	0.270	0.200	0.199	<b>0.892</b>

Note: CS = Customer Satisfaction, ECM = Employee Commitment, LCM = Leadership Commitment, TI = Technology Innovation, and CSRP= Corporate Social Responsibility, SRAVE = Square Roots of Average Variance Extracted.

The confirmatory factor analysis loadings and mean estimated values show that customer satisfaction, technological innovation, and employee commitment are more likely to influence Ethiopian Airlines CSR practice. Similarly, the airline's CSR practices are primarily based on economic, legal, and philanthropic considerations. In comparison, the ethical and environmental CSR aspects have low loadings and mean values, whereas leadership commitment has a minimal impact on loadings and mean values. This implies that the leadership's attention to ethical and environmental CSR efforts must play a role in CSR practices.

### 4.3 Analysis of Structural Equation Model

Moreover, the structural equation model was evaluated after the measurement model was assessed. In addition, the adequacy of the hypothesized structural equation model was evaluated using three primary conditions. The overall goodness-of-fit, the statistical significance of the estimated path coefficients, and the model's capability to explain and predict the variance in the outcome variable were the assumptions. The goodness-of-fit indices show that the measurement model is accurate and acceptable. The model is satisfactory and adequate compared to the estimated values of R-square 0.720 and 0.681, confirming the level of explaining all variables' impact on the model. Furthermore, the model's chi-square ( $\chi^2$ ) is less than 3; the GFI was 0.947, which was above 0.90; AGFI was 0.902, which was more significant than 0.80; CFI was also 0.938, which was greater than 0.9; TLI was 0.923, which was higher than 0.9; and RMSEA was 0.046, which was less than 0.08 as shown in Table 2. Therefore, the fit indices indicate that the model fits the research data well.

**Table 3:** Model-fit-indices for Overall Model

Model Fit Indices	Recommended Value	Value of Structured Model
$\chi^2/df$	< 3.0	2.624
GFI	$\geq 0.90$	0.947
TLI	$\geq 0.90$	0.915
CFI	$\geq 0.90$	0.938
AGFI	>0.80	0.902
RMSEA	<0.08	0.046

Note:  $\chi^2/df$  =, GFI = Goodness-of-fit index, TLI = Tucker-Lewis Index, CFI = Comparative Fit Index, AGFI = Adjusted Goodness-of-fit Index, RMSEA = Root Mean Square Error of Approximation

**4.4. Analysis of Path Modeling Estimates**

The Critical Ratio (C.R) determined the significance of the predicted parameters since the study used SPSS/AMOS. As a result, all estimates for the conceptual research model were within acceptable limits (no correlations more significant than one and no negative covariance). Based on a level of 0.05 significance, the C.R needs to be greater than ± 1.96, to accept the hypothesis that the estimate equals 0.000 (Joseph et al., 2014). When the C.R value is greater than 1.96 for an estimate, then the parameter coefficient value is statistically significant at the 0.05 level (Byrne, 2010). Thus, the critical value (C.R) is obtained by dividing the regression weight estimate by estimating its standard error (S.E). In the research models, based on the level of 0.05, all the CR were greater than 1.96, which indicates the significance level of the estimated coefficients. In other words, when the sample size is large enough, the critical ratio indicates a normality of test assumptions. In this scenario, a C.R. value of greater than 1.96 indicates two-sided significance at the standard 5% level threshold. To sum up, the standardized path coefficients ( $\beta$ ), standard error (S.E), critical ratio (C.R), p-values, and the hypothesized results for the entire research model are shown in Table 5.

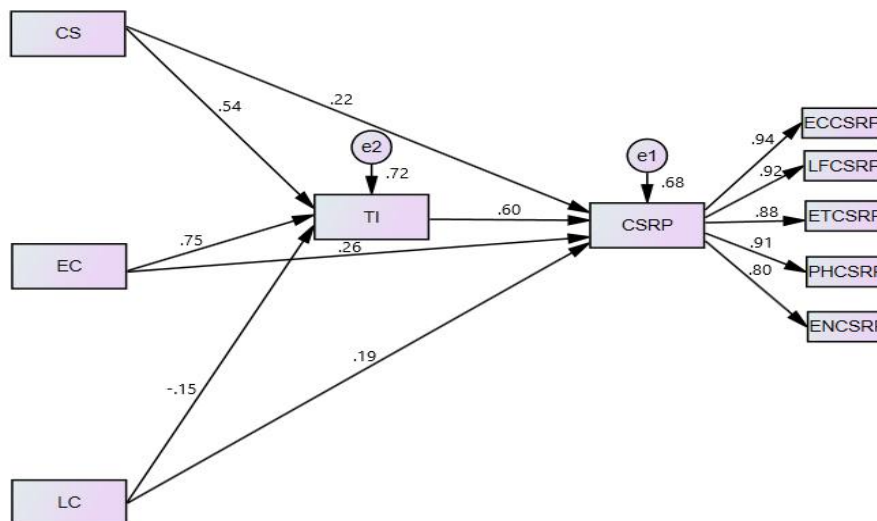
**Table 4: Path Coefficients of the Standardized Model**

Constructs	Path	Constructs	Estimate	S.E.	C.R.	P-Values
CS	→	TI	.537	.018	29.883	***
EC	→	TI	.748	.023	32.522	***
LC	→	TI	-.146	.026	-5.615	.021
CS	→	CSRP	.222	.031	7.161	***
EC	→	CSRP	.261	.019	13.736	***
LC	→	CSRP	.192	.021	9.143	***
TI	→	CSRP	.602	.033	18.242	***

Explained variance on each predictor variable (R <sup>2</sup> )	
TI	CSRP
.720	.681

Note: CS = Customer Satisfaction, ECM = Employee Commitment, LCM = Leadership Commitment, TI = Technology Innovation, and CSRP= Corporate Social Responsibility Practice, \*\*\*= p-value < 0.001.



**Figure 1: Standardized Path Coefficients and Significance of the Structural Model.**

After the measuring model has been validated, the relationships between constructs must be assessed. The values of the path coefficients or standardized regression weights ( $\beta$ ) and the explained variance ( $R^2$ ) were used to evaluate the structural model using AMOS. Besides, the path coefficients are standardized values because they are estimates derived from constructed relationships. The results of hypothesis testing and path analysis according to the inner model for the standardized path coefficients are shown in Figure 2.

To test the stability of the estimates provided by SEM (nonparametric Bootstrap technique), we applied nonparametric resampling methods. According to the path diagram, technological innovation significantly mediates the relationship between customer satisfaction, employee commitment, and leadership commitment in CSR practice. Employees and customers positively and strongly impact technology innovation and CSR, whereas transformational leadership has an indirect and substantial impact. Likewise, economic, legal, and philanthropic CSR concerns have the greatest impact on CSR outcomes, but ethical and environmental CSR aspects have a moderate effect.

#### 4.3.2 The Mediation Effects of Technology Innovation

However, in the complete model, the effect and explaining the influence of customer satisfaction, employee and leadership commitment on the outcome of CSR practice is positive and significant ( $\beta = 0.60$ ;  $p < 0.001$ ), with the joint support of mediation technology innovation explaining 72% of the variance in the CSR performance of Airlines enterprises. Therefore, the stated hypothesis and proposed conceptual model are confirmed.

As the mediation effects show, innovation and CSR are the foundation of an airline's business capabilities. This means that improvements in the CSR process can be associated with social change, whereas changes in innovation can be considered technological innovations. As a result, Airlines must do more to address concerns about technological innovation and social change to maintain their CSR credentials.

Moreover, the mediation effect was determined and supported using the product distribution approach (Sobel, 1982) for Sobel's test and a nonparametric bootstrapping procedure (Preacher and Hayes, 2008), which yielded the coefficients, standard error, and significance of each path for the Sobel test, as shown in Table 5.

**Table 5:** The Results of Mediation Effects

Mediator (Path)	Coefficients	Standard Error	Sobel Test	p-Value
CS→TI	0.537	0.018	15.563	0.000
TI→CSR	0.602	0.033		
EC→TI	0.748	0.023	15.910	0.000
TI→CSR	0.602	0.033		
LC→TI	-0.146	0.026	-5.367	0.000
TI→CSR	0.602	0.033		

Note: CS = Customer Satisfaction, EM = Employee Commitment, LC = Leadership Commitment, TI = Technology Innovation, and CSR = Corporate Social Responsibility Practice; \*\* = p-value < 0.001.

Accordingly, the Sobel test is being used to see if a variable carries (mediates) an independent variable's (customer satisfaction, employee commitment, leadership commitment) effect on the dependent variable CSR practice desired outcome. Because of the Sobel test findings, technology innovation is a mediating factor in the impact of CSR practices on customer satisfaction, employee commitment, and leadership commitment. Consequently, technological innovation in large airline corporate enterprises from Ethiopia plays a mediating role in how customer satisfaction, employee commitment, and leadership commitment affect the reputation of corporate social responsibility (CSR) practices. Thus, findings suggest that more innovative airline companies engage more in the standings of corporate social responsibility activities.

### 4.3.3 Tests of Hypothesis Results and Decisions

This study identified the impacts of customer satisfaction and employee and leadership commitment matters on the reputations of CSR practice. Moreover, the mediation mechanism supports the sequence of hypothesized relationships. Furthermore, the study also used the product of distribution approach to estimate the multiplier effects of the mediation variable. With this regard, the path coefficients of the structural model result are reported in Table 4 and Figure 2, whereas the mediation effects are stated as shown in Table 5. The findings revealed that customer satisfaction positively and significantly affects the reputation of CSR practice ( $\beta = 0.222, p < 0.001$ ). This supported hypothesis H<sub>1</sub>. Employee commitment positively and substantially influences CSR practice ( $\beta = 0.261, p < 0.001$ ), which supports idea H<sub>2</sub>.

Similarly, leadership commitment is positively and significantly associated with CSR practice ( $\beta = 0.192, p < 0.001$ ). Thus, hypothesis H<sub>6</sub> is supported from the direct effect perspective. Likewise, the findings indicated that customer satisfaction is positively and significantly related to technology innovation ( $\beta = 0.537, p < 0.001$ ). This supported hypothesis H<sub>4</sub>. Employee commitment is more likely to have a positive and significant association with technology innovation ( $\beta = 0.748, p < 0.001$ ), which supports hypothesis H<sub>5</sub>. Conversely, leadership commitment is negatively and significantly linked with technology innovation ( $\beta = -0.146, p < 0.001$ ). This supported hypothesis H<sub>6</sub> of the study, but it is significant.

Furthermore, the statistical findings confirmed that technology innovation has a strong significant mediation effect between customer satisfaction and the outcome of CSR practice ( $Z = 15.563$ ), supporting hypothesis H<sub>5a</sub>. The impact of employee commitment on CSR practice through technological innovation was also substantial ( $Z = 15.90$ ), supporting hypothesis H<sub>8b</sub>. However, the findings revealed a significant effect of leadership commitment on CSR endeavors, which is inversely linked to the mediator technology innovation ( $Z = -5.367$ ), which does not support hypothesis H<sub>7c</sub> of the study. According to the results of the interviews, airline executives are limited in their ability to focus on technology innovation due to increased expenditures. This affects the interaction between the technological innovation system and the feature of leadership.

In general, the ability of technology innovation has both direct and indirect mediation effects on the outcome of Ethiopian Airlines' CSR practice. These findings imply that the study's framework and hypothesis are consistent with earlier research findings based on stakeholder and dynamic capability theories.

**Table 6:** Tests of Hypothesis and Decisions.

Effects of Structural Path			Coefficients	S.E.	C.R	p-Value	Decisions
CS	→	CSRP	0.222	0.031	7.161	0.000***	Supported
EC	→	CSRP	0.261	0.019	13.736	0.000***	Supported
LC	→	CSRP	0.192	0.021	9.143	0.000***	Supported
CS	→	TI	0.537	0.018	29.883	0.000***	Supported
EC	→	TI	0.748	0.023	32.522	0.000***	Supported
LC	→	TI	-0.146	0.026	-5.615	0.000***	Not Supported
TI	→	CSRP	0.602	0.033	18.242	0.000***	Supported

## 5. Discussion

Companies must engage in CSR practices to obtain a competitive advantage. Furthermore, firms must constantly adjust their strategy, organizational structures, and procedures to the continually changing environment (Li et al., 2021). The enterprises' dynamic capability may become a competitive advantage in this setting, where firms' socially responsible actions can translate into dynamic capabilities. Consequently, investments in socially responsible initiatives and technological innovation may assist businesses in developing new resources and competencies. In this aspect, it is challenging to consider the reputations regarding CSR practices that incorporate airline businesses without considering technological innovation, customer, employee, and leadership commitment. Therefore, this paper aims to explore the mediating effects of technology innovation on customer satisfaction and employee and leadership commitment in CSR practice evidence from Ethiopian Airlines. Hence, the study's findings anticipated to address three primary research questions aligned with the stated hypothesized conceptual model accordingly.

The outcomes of this study contribute to theoretical implications by increasing some understanding and knowledge. Most of the literature on CSR, technology innovation, and sustainability consequences has not more conclusively supported the extent to which economic, social, environmental, legal, ethical, and philanthropic aspects can attained in combination (Nosratabadi et al., 2019; Sánchez-Infante Hernández et al., 2020). As a result, we found that technological innovation is mediating the effects of customer satisfaction and employee and leadership commitment in CSR, considering the economic, social, legal, ethical, and environmental aspects simultaneously. The findings of the results also were consistent with the previous literature. The outcomes of the study were also consistent with previous literature.

The results of this research can enable enterprises with managerial and practical issues. A structural equation model has been derived using AMOS statistical software to explore the role of technological innovation on customer satisfaction, employee commitment, and leadership commitment in CSR practices. The model consists of five primary features that could be performed simultaneously (economic, legal, ethical, philanthropic, and environmental values). Regarding managerial and practical implications, our research reveals that to achieve results based on the dynamic capability theory; Airlines must engage in CSR practices that affect all four predictor variables and five dimensions. Therefore, the findings assist the airline business enterprises, air transport providers, government agencies, employees, managers/leaders, stakeholders, and policymakers in better understanding their managerial and operational issues.

Furthermore, this study contributes innovative points. First, study the impacts of customer satisfaction, employee commitment, and transformational leadership commitment on CSR practice and determine the significant responsibility for CSR reputation or failure using technology innovation as a mediation role. Second, a comparative study on airline enterprises, what matters to engage in economic, legal, ethical, philanthropic, and environmental CSR aspects, and which features determined in the context of Ethiopian Airlines. Third, explore the effects of technology innovation as a mediator role by integrating the four variables of CSR practice considering five dimensions of corporate social responsibility based on new derived empirical research model.

## **6. Conclusion**

As the findings reveal, customer satisfaction, employee commitment, leadership commitment, and the mediation role of technology innovation all influence the CSR practice positively and significantly. It also indicates that current CSR activities in the airlines are reactive in nature, responding to customer, employee, and economic, legal, and altruistic aspects rather than being proactive in transformative leadership commitment and ethical and environmental concerns. Moreover, the findings revealed that customer satisfaction has a favorable and significant impact on the credibility of CSR practices. Employee commitment has a positive and considerable influence on CSR. Similarly, leadership commitment promotes the adoption of CSR practices positively and significantly. In addition, customer satisfaction, employee and leadership loyalty, and the direct effects of mediating technology innovation all influence the outcome of CSR practice at Ethiopian Airlines.

Furthermore, the findings revealed that the response variable customer satisfaction and employee commitment positively and significantly affects technology innovation. Conversely, the transformation leadership commitment negatively and substantially influences the mediator variable technology innovation. As a result, the role of technology innovation mediates the impact of customer satisfaction and employee and leadership commitment on CSR practice, which entirely hypothesized conceptual models have significantly supported.

To sum up, the findings indicate that, although Ethiopia Airlines is making efforts in the CSR areas, there still needs to be more in adopting well-planned CSR and technology innovation capability. It also shows that existing airline CSR efforts are reactive in nature, responding to consumer, employee, economic, legal, and altruistic aspects rather than being proactive in transformative leadership commitment and environmental and ethical concerns affected by management behavior. Based on the findings, the Airlines should prioritize digital technology innovation, transformational leadership, and moral and ecological CSR concerns as the two sides of one coin for implementing CSR reputation. This initiative will increase its workforce's dedication to implementing best practices in the airline industry, making it more viable and competitive.

This study has certain limitations. First, the study only looked at Ethiopian Airlines and did not include other countries' Airlines as a sample. This limits the generalization of our results. The investigation believes that as the size of the sample increases, some of the structural equation and path modeling analyses become important if the sample size grows larger. The study does not focus on other financial operation constraints. Integrating other economic performance indicators into primary data source measures may yield supportive results. Therefore, future studies should consider the abovementioned limits and use a different method to address them.



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